

What is claimed is:

1. A method for forming a transition-metal chalcogenide crystal having a topological structure, comprising growing a transition-metal chalcogenide crystal along a surface of a micro-droplet of a chalcogen element in an atmosphere containing either one of Group IVb, Vb and VIb transition metal elements together with said chalcogen element, in such a manner as to be formed as a loop-shaped crystal wound around the surface of said micro-droplet and having a twist of  $n\pi$ , wherein  $n$  is an integer number selected from 0, 1 and 2.
2. The method as defined in claim 1, which includes maintaining said atmosphere in a given temperature range around a melting point of said chalcogen element and in a given temperature gradient, to allow said chalcogen-element micro-droplet to be condensed from said atmosphere, and circulating said chalcogen-element micro-droplet in a nonequilibrium state to allow micro-whiskers of a transition metal chalcogenide formed in said atmosphere to be attached onto the surface of said chalcogen-element micro-droplet by the action of a surface tension of said micro-droplet and grown as said loop-shaped crystal.
3. The method as defined in claim 1, wherein said loop-shaped crystal has a ribbon-like open loop configuration or a closed loop configuration.
4. The method as defined in either one of claims 1 to 3, wherein said chalcogen element is one selected from the group consisting of S, Se and Te, and said either one of Group IVb, Vb and VIb transition metal elements is one selected from the group consisting of Nb, Ta, Zr, Ti, Hf and W.
5. A crystal having a topological structure, which comprises chalcogenide containing either one of Group IVb, Vb and VIb transition metal elements, and has a loop configuration formed by using as a template a spherical surface of a droplet of a chalcogen element, said loop configuration

having a twist of  $n\pi$ , wherein  $n$  is an integer number selected from 0, 1 and 2.

6. The crystal as defined in claim 5, which has a ribbon-like open loop configuration or a closed loop configuration.

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7. The crystal as defined in claim 5 or 6, wherein said chalcogen element is one selected from the group consisting of S, Se and Te, and said either one of Group IVb, Vb and VIb transition metal elements is one selected from the group consisting of Nb, Ta, Zr, Ti, Hf and W.

10 8. The crystal as defined in either one of claims 5 to 7, wherein said twist in said topological structure is formed by a crystalline disclination.